April 15, 2019

Chris Nagel
Director, Solid Waste Management Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Re: Groundwater Monitoring System Certification for City of Columbia Water & Light Department Inactive Surface Impoundment (More's Lake)

Dear Mr. Nagel:

On behalf of City of Columbia Water & Light Department (City), Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) is hereby submitting certification that the groundwater monitoring system at the inactive surface impoundment (More's Lake; currently in process of closure by removal) located at the City of Columbia Municipal Power Plant has been designed and constructed to meet the requirements of section 40 CFR §257.91- Groundwater Monitoring Systems, which is contained in the United States Environmental Protection Agency's (EPA's) *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule* (Final Rule, 40 CFR Parts 257 and 261). The City's inactive surface impoundment meets the definition of a Surface Impoundment as presented in the Final Rule and is therefore subject to groundwater monitoring requirements identified in 40 CFR §257.91. This certification is intended to fulfill the requirements presented in 40 CFR §257.91(f).

In May 2017, the City installed a groundwater monitoring system in accordance with the *Hydrogeologic Investigation Work Plan* (Work Plan) prepared by Burns & McDonnell in March 2017 to the Missouri Department of Natural Resources' (MDNR) Environmental Geology Section. MDNR issued a letter approving the Work Plan and proposed well installations on May 5, 2017. The resulting groundwater monitoring system is compliant with the requirements presented in 40 CFR §257.91(c)(1), as the system includes six upgradient and three downgradient monitoring wells. The system construction was detailed in the *Hydrogeological Investigation Report for More's Lake* by Burns & McDonnell, accepted by MDNR with no further comments on August 8, 2018. A summary of the existing groundwater monitoring system is presented below. Well construction diagrams and a figure providing the location of groundwater monitoring wells will be included in the City's operating record.

Historical Direction of Groundwater Flow

The direction of groundwater flow beneath the inactive surface impoundment is generally west to northwest based on historical groundwater monitoring activities. Given the historical direction of groundwater flow, the following wells have been selected for use in the groundwater monitoring system and have been identified as either upgradient or downgradient monitoring wells.

Upgradient Monitoring Wells

Five (5) monitoring wells, MW-2 through MW-6, are located east and south of the surface impoundment, immediately adjacent to the surface impoundment, and were installed in May 2017. These wells are screened within the upper glacial drift aquifer and are being utilized as upgradient monitoring wells in the groundwater monitoring system for the surface impoundment. MW-2, MW-3, and MW-4 were installed to the northeast, east, and southeast of the surface impoundment, respectively. MW-5 and MW-6 were installed along the southeast and south boundary of the surface impoundment, respectively. The groundwater monitoring system satisfies the requirement [specified in 40 CFR §257.91(c)(1)] of having a minimum of one upgradient monitoring well. Monitoring well MW-7 was installed near the southwest boundary of the surface impoundment. MW-7 will be considered as a sixth upgradient well or as a cross-gradient well.

Downgradient Monitoring Wells

Three (3) monitoring wells, MW-1, MW-8, and PZ-2 will serve as downgradient monitoring wells at the surface impoundment. Monitoring wells MW-1 and MW-8 were installed in May 2017 and PZ-2 was installed in January 2014 (prior to the issuance of the Final Rule). These wells were screened within the upper glacial drift aquifer to provide continuity between the units screened by the upgradient and downgradient wells. MW-8 and PZ-2 were installed to the west and northwest of the surface impoundment, respectively. MW-1 was installed along the northern boundary of the surface impoundment. These wells provide the minimum of three downgradient monitoring locations as specified in 40 CFR §257.91(c)(1).

Limitations

This letter has been prepared in accordance with generally accepted environmental engineering practices for groundwater quality assessment and reporting. Conclusions contained herein are Burns & McDonnell's interpretation of readily available data and constitute a professional opinion based on said data. No other warranty, expressed or implied, is made as to the information included in this document. In the event that others make conclusions and recommendations based on data contained herein, such conclusions and recommendations are the responsibility of others.

Burns & McDonnell has exercised reasonable skill, care, and diligence in preparation of this letter in accordance with customarily accepted standards of good professional practice in effect at the time this report was prepared.

Special risks are inherently associated with the characterization and description of groundwater, including, but not limited to groundwater occurrence, site geology, and site hydrogeology. Even a comprehensive groundwater assessment and/or monitoring program using appropriate

equipment, implemented by experienced personnel under the direction of trained professionals, may fail to detect certain conditions.

Changes in subsurface conditions can be influenced by many factors. These factors include but are not limited to management of surrounding areas, seasonal rainfall fluctuations, changes in drainage conditions in and around the site, and groundwater occurrence. Over time, actual conditions discovered are subject to variation because of natural occurrences and/or man-made intervention on or near the site.

If you have questions regarding the information presented herein please contact Brian Weis at 816-823-7824 or via email at bweis@burnsmcd.com.

Sincerely,

Mr. Brian C. Weis, PE
Project Manager

Mr. Chris Hoglund, PG
Project Geologist

04/15/19 1:26 PM

cc: Christian Johanningmeier (City)
Darrell Hartley (MDNR)
Jeremiah Jackson (MDNR)